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Agilent Ref: 10010116-1
United States Application Serial No. 10/632,600

REMARKS

In view of the following remarks, the Examiner is requested to withdraw the rejections and allow Claims 1-39, the only claims pending and currently under examination in this application.

FORMAL MATTERS

Claims 1- 39 have been rejected.

Claims 14-29 and 37-38 were previously withdrawn but are now rejoined.

Claims 1, 19 and 24 have been amended to include the step of providing a fluid comprising insoluble particulates (Claims 1 and 24) or a fluid comprising insoluble synthetic polymers (Claim 19). Support for this amendment may be found throughout the specification, for example, at paragraphs [0051], [0053], [0058] and [0059].

Claims 37 and 38 have been amended to incorporate the particulate comprising-fluid according to Claim 1. Support for this amendment may be found at paragraphs [0076] and [0096] of the instant specification.

Claim 20 has been amended to correct a typographical error.

As the above amendments enter no new matter to the application, their entry is respectfully requested.

Rejection under 35 U.S.C. § 112, Second Paragraph

Claim 20 has been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. Specifically, Claim 20 has been rejected because the term "laser-scribed glass" allegedly lacks antecedent basis. In view of the above amendment, this rejection may be withdrawn.

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Rejection under 35 U.S.C. § 102

Claims 1-4 and 9-10 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Scheerder (U.S. Patent Pub. No. 2002/0007209).

According to MPEP § 2131, a claim is anticipated by a reference only if the reference teaches each and every element of the claim.

Scheerder discloses a method of producing a radially expandable prosthesis for implantation, i.e., a stent. According to Scheerder's disclosure, the laser-processed stent may be cleaned in the presence of an alkaline solvent in an ultrasonic bath [para.0080].

In making the rejection, the Examiner alleges that "it is inherent that the fluid comprises particles in the form of debris that comes off the substrate" (Office Action, p. 4). As such, the Examiner appears to be equating Scheerder's alkaline solvent which includes particles and debris that came off the substrate during the ultrasonic bath with the fluid comprising insoluble particulates recited in instant Claim 1.

However, Claim 1 recites a method for removing laser debris from a laser-scribed substrate surface which includes the following steps:

- (a) providing a fluid comprising insoluble particulates;
- (b) contacting the substrate surface with the fluid; and
- (c) ultrasonically or sonically agitating the fluid in contact with the substrate to remove laser debris from said substrate surface.

As such, the fluid comprising insoluble particulates is first produced and then contacted with the substrate surface which is then ultrasonically or sonically agitated to remove laser debris from the substrate surface.

However, nowhere in the disclosure does Scheerder teach a method of first providing a fluid comprising insoluble particulates, which is then contacted with the

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substrate surface and ultrasonically or sonically agitated to remove laser debris. Instead, Scheerder discloses an alkaline solvent which includes particles and debris that came off the substrate during an ultrasonic bath.

Therefore, Scheerder fails to teach each and every element of the present invention. Accordingly, this rejection may be withdrawn.

Claims 1, 2 and 9 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Vernon et al. (U.S. Patent No. 3,866,398).

As set forth above, the method of Claim 1 includes the step of providing a fluid comprising insoluble particulates. As such, the fluid comprising insoluble particulates is first produced and then contacted with the substrate surface which is then ultrasonically or sonically agitated to remove laser debris from the substrate surface.

In contrast, Vernon et al. discloses a method for preventing the deposition of silicon debris upon active circuit areas of semiconductor devices. In the disclosure, Vernon describes a method of ultrasonically agitating a silicon slice after laser scribing in deionized water for removal of tenacious silicon debris [col. 1, lines 26-30].

However, nowhere in the disclosure does Vernon teach a method of first providing a fluid comprising insoluble particulates, which is then contacted with the substrate surface and ultrasonically or sonically agitated to remove laser debris. Instead, Vernon discloses deionized water which includes particles and debris that came off the silicon slice during the ultrasonic bath.

Therefore, Vernon fails to teach each and every element of the present invention. Accordingly, this rejection may be withdrawn.

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Claims 19-20, 22-27 and 39 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Ronay et al. (U.S. Patent No. 5,968,280).

Independent Claims 19 and 24 and the claims dependent thereon, each claim a method of modifying a substrate surface by contacting the surface with a fluid comprising insoluble synthetic polymers (Claim 19) or a fluid comprising insoluble particulates (Claim 24). In other words, the synthetic polymers or the particulates remain in solid form within the fluid.

With respect to Claim 39, this claim indirectly depends on Claim 1. As such, Claim 39 incorporates all of the elements of instant Claim 1. In particular, Claim 39 includes a fluid comprising insoluble particulates.

In contrast, Ronay describes a cleaning composition which contains a polyelectrolyte for cleaning a surface of a semiconductor wafer. Ronay discloses that a polyelectrolyte is a substance that contains polyions that are "soluble in polar solvents" [col. 2, line 50].

However, nowhere in the disclosure does Ronay teach a fluid comprising insoluble synthetic polymers as in Claim 19 or a fluid comprising insoluble particulates as in Claims 24 or 39. Therefore, Claims 19-20, 22-27 and 39 are not anticipated by Ronay because the reference fails to teach each and every element of these claims. Accordingly, this rejection may be withdrawn.

Claims 19 and 37-38 have been rejected under 35 U.S.C. § 102(e) as being anticipated by Lin (U.S. Patent No. 6,917,397).

As noted above, an element of independent Claim 19 and Claim 1 (from which Claims 37 and 38 depend from) is the initial step of providing a fluid comprising insoluble synthetic polymers (Claim 19) or a fluid comprising insoluble particulates (Claim 1). As such, the fluid comprising insoluble synthetic polymers

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/insoluble particulates is first produced and then contacted with the substrate surface which is then ultrasonically or sonically agitated to remove laser debris from the substrate surface (Claim 1) or modify the substrate surface (Claim 19).

In contrast, Lin et al. discloses a process for removing a polymer film from a chip substrate. According to the disclosure, Lin teaches soaking the substrate in an organic solvent to dislodge the DFR layer. The chip substrate is then agitated by sonic waves to dislodge any remaining DFR particles from the substrate.

As such, it appears that the Examiner is equating Lin's solvent having dislodged particles with the fluid comprising insoluble synthetic polymers of instant Claim 19 or the fluid comprising insoluble particulates of instant Claim 1.

However, contrary to the Examiner's assertion, Lin's method does not include the initial step of first providing a fluid comprising insoluble synthetic polymers/particulates. Instead, Lin's organic solvent merely includes particles that have dislodged from the substrate once the substrate has already contacted the fluid.

In view of the foregoing discussion, Lin et al. fails to teach each and every element of Claims 19 and 37-38. Accordingly, this rejection may be withdrawn.

Rejection under 35 U.S.C. § 103

In the Office Action, Claims 1-2, 4-6, 9-12 and 39 have been rejected under 35 U.S.C. § 103(a) as being obvious over Taylor (U.S. Patent No. 3,997,358) in view of Vernon (U.S. Patent No. 3,866,398).

With respect to rejections made under 35 U.S.C. § 103, MPEP § 2142 states:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the

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knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir.1991).

As set forth above, the method of Claim 1 includes the step of providing a fluid comprising insoluble particulates.

According to the Office Action, the Examiner acknowledges that Taylor fails to teach or suggest placing the particulates in a fluid [Office Action, p. 6]. As such, the Examiner relies on Vernon to provide the element of a fluid comprising insoluble particulates as recited in Instant Claim 1.

However, the Applicants submit that a *prima facie* case of obviousness cannot be established because one of skill in the art would not find it obvious to modify Taylor's method to include a fluid, as taught by Vernon.

Taylor's method employs glass or metal beads which are placed into a basket with a semiconductor die and mechanically mixed to remove the debris and slag. In other words, Taylor's beads are directly placed on the die without a fluid.

As such, Taylor discloses a dry method in which beads are mechanically mixed with the substrate in a basket. According to Taylor's disclosure:

"the slag and droplets are formed in the molten state...and adhere tenaciously to the die surfaces, ...and cannot be effectively removed by the normal die operations used to remove chips and loose particles such as washing in ultrasonically agitated distilled water" (col. 2, lines 18-23).

As evident from above, Taylor specifically teaches that methods of

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ultrasonically agitating distilled water are ineffective at removing particles and debris. As such, Taylor teaches away from employing such methods. Therefore, one of skill in the art, from reading Taylor, would not be motivated to combine Taylor's method of removing debris to include ultrasonic agitation in deionized water as taught by Vernon.

Additionally, one of skill in the art would not be motivated to modify Taylor's method to include ultrasonic agitation in deionized water as taught by Vernon because Taylor's method would be rendered unsatisfactory for its intended purpose.¹

According to Taylor's disclosure, the surfaces of the die are cleaned of debris and slag which then falls through the wire mesh of the basket:

Another fundamental aspect of the invention resides in the use of a wire mesh cylinder in which the openings in the wire mesh are sized so as to retain the die and beads inside the cylinder while allowing the removed particles of slag and debris to fall away through the wire mesh of the cylinder. The irregularly shaped and abrasive pieces of slag and debris are thus separated from the die and beads as they mix and tumble together and are therefore prevented from scratching or marring the surfaces of the die (col. 2, lines 31-40).

However, if Taylor were modified to include a fluid as suggested by the Examiner, then Taylor would be required to use a solid basket instead of a wire mesh basket. However, the wire mesh basket is an integral component of Taylor's invention. By employing a solid basket, Taylor's method would be rendered unsatisfactory for its intended use because there would be no openings for the slag and debris to fall through during the mixing process. Without such openings, the slag and debris would not be separated and would result in the scratching and marring of the substrate surface.

In view of the foregoing discussion, a *prima facie* case of obviousness cannot be established because one of skill in the art would not be motivated to combine

¹ The MPEP § 2143.01 clearly states that if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.

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Taylor's dry method of removing slag and debris to include a fluid as taught by Vernon. Accordingly, this rejection may be withdrawn.

In the Office Action, Claim 7 has been rejected under 35 U.S.C. § 103(a) as being obvious over Taylor (U.S. Patent No. 3,997,358) in view of Vernon (U.S. Patent No. 3,866,398) as applied to Claim 1 and in further view of Dalton et al. (U.S. Patent No. 4,328,047).

As Claim 7 depends from independent Claim 1 and as Dalton was cited merely for teaching the frequency of 80 KHZ, the Applicants submit that Claim 7 is patentable over the cited references for at least the reasons described above. Accordingly, this rejection may be withdrawn.

Claim 8 has been rejected under 35 U.S.C. § 103(a) as being obvious over Taylor (U.S. Patent No. 3,997,358) in view of Vernon (U.S. Patent No. 3,866,398) as applied to Claim 1 and in further view of Rupe et al. (U.S. Patent No. 4,116,851).

As Claim 8 depends from independent Claim 1 and as Rupe was cited merely for teaching particulates having the same specific gravity as the fluid, the Applicants submit that Claim 8 is patentable over the cited references for at least the reasons described above. Accordingly, this rejection may be withdrawn.

In the Office Action, Claims 1-4, 9-10, 13 and 30-36 have been rejected under 35 U.S.C. § 103(a) as being obvious over Miller (U.S. Patent No. 5,418,136) in view of Scheerder (U.S. Patent Pub. No. 2002/0007209).

Miller discloses a method for producing an array by laser-scribing the substrate. However, as acknowledged by the Examiner, Miller fails to disclose the manner in which the substrate surface is modified [Office Action, p. 8].

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As such, the Examiner is relying on Scheerder to make up for the deficiency of Miller. Specifically, the Examiner appears to be equating Scheerder's method of cleaning a laser-processed stent by using an ultrasonic bath with the method of removing laser debris from a laser-scribed substrate surface as recited in present Claim 1.

As previously discussed above, the method of Claim 1 includes the step of providing a fluid comprising insoluble particulates. As such, the fluid comprising insoluble particulates is first produced and then contacted with the substrate surface which is then ultrasonically or sonically agitated to remove laser debris from the substrate surface.

However, nowhere in the disclosure does Scheerder teach or suggest a method of first providing a fluid comprising insoluble particulates, which is then contacted with the substrate surface and ultrasonically or sonically agitated to remove laser debris as recited in instant Claim 1. As such, Scheerder fails to make up for the deficiency of Miller.

In view of the foregoing discussion, the combined teachings of the cited references fail to teach or suggest each and every element of the instant claims. Accordingly, this rejection may be withdrawn.

In the Office Action, Claims 1-12, 21, 28 and 29 have been rejected under 35 U.S.C. § 103(a) as being obvious over Ronay et al. (U.S. Patent No. 5,968,280).

As set forth above, independent Claim 1 and the claims dependent thereon include the element of a insoluble particulate-comprising fluid.

Additionally, Claims 21 and 28 depend on Claims 19 and 24, respectively. As such, Claim 21 incorporates the element of a fluid comprising synthetic polymers as in Claim 19 and Claim 21 incorporates the element of a fluid comprising insoluble

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particulates as in Claims 24.

However, as previously discussed above, nowhere in the disclosure does Ronay teach or suggest a fluid comprising synthetic polymers as in Claim 19 or a fluid comprising insoluble particulates as in Claims 1 or 24. Therefore, Ronay fails to teach or suggest each and every element of Claims 1-12, 21, 28 and 29. Accordingly, this rejection may be withdrawn.

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CONCLUSION

The Applicants submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone Timothy Joyce at 408- 553- 2510.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-1078.

Respectfully submitted,

Date: November 27, 2006

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